the tongue, by the softness and delicacy of their structure, and they present a striking analogy to the rods and cones of the retina or the olfactory mucous membrane; (2) of terminal nervous filaments, pale in color, and placed and located immediately under the epithelium. Continuity between the nervous element and the epithelium, has not yet been demonstrated.

Beginning the study of the distribution of the nerves in the tongue and their functions, M. Lannegrace, after having stated and discussed the older and more recent experiments relative to the physiology of these nerves, formulates the following conclusions:

Motor Nerves.—The hypoglossal is a motor nerve for the tongue, the anastomosis it receives from the first cervical pair furnishing it its motor fibres.

The glosso-pharyngeal controls the contraction of the pillars of the palatal vault.

The lingual possesses no motor fibres.

The facial presides to a very slight degree over the contraction of the stylo-glossus muscle.

The fibres of the chorda tympani pass (at least, in part) to the muscular fibres of the tongue, but act only in case of the deprivation of function of the hypoglossal.

Sensory Nerves.—The hypoglossal, ordinarily insensible at its origin, becomes sensory outside of the cranium; it possesses both a direct and a recurrent sensibility, due either to anastomoses with the vagus, the cervical plexus, or the lingual. Section of the hypoglossi does not, apparently, diminish the general or gustatory sensibility of the tongue.

The glosso-pharyngeal presides over the gustatory sensibility, especially for the perception of bitters in the posterior portion of the tongue. It is not the only gustatory nerve, but it is the nerve of taste *par excellence.* With the pneumogastric it supplies sensation to the base of the tongue.

The mixed lingual (which receives the chorda tympani) presides over the general sensibility and the sense of taste in the anterior two-thirds of the tongue, but takes only a small part in the perception of savors.

The chorda tympani possesses gustatory fibres, but it further has an indirect influence on the sense of taste, by virtue of the modifications it causes of the circulation in the anterior portion of the tongue.

M. Lannegrace closes his memoir by giving the various hypotheses of the origin of the chorda tympani.

ANATOMY OF THE DEPRESSOR NERVE.—This nerve, which was hitherto known only in the rabbit and the cat, was found by A. Kreidmann (*Arch. f. Anat. u. Phys.*, 1878, IV. & V., p. 405) also in man and other animals. In man the vagus consists of three or more bundles contained in one common sheath. From the most internal of these branches the superior laryngeal nerve arises. This nerve gives off a small twig, receives a second fine root from the vagus itself. So far, the arrangement is the same as in the rabbit. The difference, however, is that the depressor nerve, arising from these two roots, continues as a separate nerve in that animal, while in man it does not leave the sheath of the vagus, but returns to and re-enters the trunk of the vagus. The depressor fibres, however, are somewhat brighter in color than the rest of the nerve. In one cadaver out of six Kreidmann found the depressor nerve to continue for a distance of about 3 cm., as a separate nerve with distinct sheath.

A similar arrangement was found in the dog and sheep.

METALLOSCOPY ON FROGS.—In order to obtain a physiological basis for experiments on metalloscopy, Dr. H. Vierordt (*Centralbl.*, No. 1, 1879) studied the influence of metals externally applied on the sensibility of frogs.

The cerebrum was removed, to prevent spontaneous movements, and the animal fastened in an upright position. A round disc of zinc was applied to the abdomen (in one instance lead was used). The tests were begun fifteen minutes after removal of the hemispheres. The sensibility was tested by touching or compressing a toe of the animal and recording the number of times a reflex movement of that foot, or both feet, occurred. Each animal was tested during periods of twenty-five to forty minutes, alternately with or without metallic application. The figures given show a decided increase of reflex irritability by metallic applications. (The method, however, is very unreliable. A positive or negative result could easily be due to an (involuntary) inequality of mechanical irritation.)

The following papers have also recently appeared on the Anatomy and Physiology of the Nervous System:

HURD, The Physiology of Sleep, *Boston Med. and Surg. Journal*, Dec. 26, 1878.—IRELAND, Thoughts Without Words, *Journal of Mental Science*, Jan.—CARPENTER, Effects of Attention on the Bodily Organs, *Brit. Med. Jour.*, Dec. 14.—HOLL, on the Nervus Accessorius Willisii, *Archiv f. Anat. u. Phys.*, Anat. Abtheil., 1878, VI. Hft.—KRONECKER and STIRLING, On the so-called Initial Contraction, *Ibid*, Phys. Abth., 1878, V. & VI. Hft.—VON KRIES, The Physiology of the Sense of Sight, *Ibid.*—BIRDSALL, The Em bryogeny of the Sympathetic, *Archives of Medicine*, April.—ARLOING, Determination of the Excitable Points in the Cortex of the Hemispheres of Solipede Animals; Application to the Cerebral Topography, *Revue Mensuelle*, Mar. 10.—ADAMKIEWICZ, On the Physiology of the Sweat Secretion, *Virchow's Archiv*, LXXVIII.—OBERSTEINER, Experimental Researches on Attention, *Brain*, Jan.